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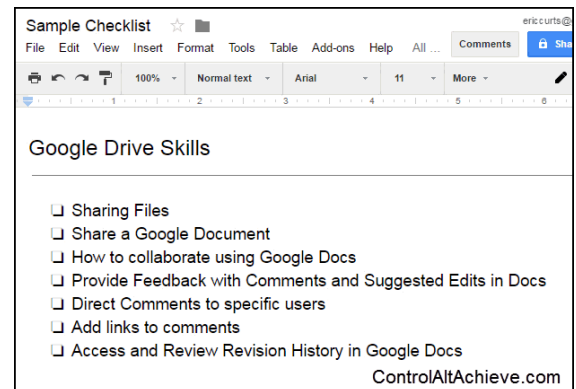
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## Instructions for Using This Template

1. Go to File > Make a Copy. Do not edit the template.
2. Rename the File (yourlastname\_digital\_learning\_workshop)
3. Type appropriate information below the pre-set headings. Information starting on the abstract page count toward the 2-page limit (single-spaced and font as given). Page 1 is only for organizational purposes.
4. When complete, go to File > Download as PDF to upload to EasyChair.

### Category

- Data-Driven Course Design
- MOOC Success Stories**
- Blended/Hybrid Learning
- Applications of the Science of Learning (in Online and Blended/Hybrid Learning)
- Innovative Use of Digital Learning Environments (such as interesting uses of MOOCs, etc.)



### Title

HBKUx: The Success of Solar Energy in Hot Desert Climates Professional Certificate Program

### Author(s)

Dr. Marwan Khraisheh, Tracey-Lee Davis

### University or Organization

Hamad Bin Khalifa University

## Abstract

HBKUx launched the *Solar Energy in Hot Desert Climates* professional certificate program as its first Massive Open Online Course (MOOC) at the start of 2019. With a focus on the resource assessment and deploying of solar panels specifically in the hot and harsh conditions of the desert, this program provides a unique look into a popular topic on learning platforms such as edX. The program is designed to provide both academic content, as well as practical, in-field techniques that address and develop the skills of learners on the program.

## Introduction

The current trends in higher education are geared towards producing graduates with both knowledge and skills, ready to confidently enter the workplace. Curricula and modes of instruction need to be adapted to successfully address these trends, to engage learners on programs that will develop their foundational competencies and teach the future skills employers require.

A report published by Baden Wurttemberg-Cooperative State University in 2019 outlines future skills in three dimensions. The first of these dimensions focuses on personal skills - being able to learn autonomously, self-motivation and self-initiative. The second dimension relates to subject-knowledge and the ability to analyze and reflect upon what has been taught - being able to not only learn the theory, but to also apply in practice. The third dimension looks at social, societal and organizational-related skills. (Ehlers, Ulf. –D., Kellerman, Sarah A. 2019)

According to The World Economic Forum's *The Future of Jobs Report 2018* at least 54% of all employees will need to be re- and upskilled by 2022. The skills required to do most jobs will have changed remarkably by 2022, with these skills including analytical thinking, innovation as well as the 'human' skills of creativity, initiative and critical thinking. (World Economic Forum, 2018)

The Baden Wurttemberg-Cooperative State University report also states that "The 'future skills' scenario suggests that higher education institutions would leave the current model that focusses on knowledge acquisition. Instead, new profiles would be developed that emphasize graduates' future skills development." (Ehlers, Ulf. –D., Kellerman, Sarah A. 2019)

Learning programs, whether online or blended, should be presented in a way that directly addresses this future skills development. With edX placing a key focus on professional certificate programs and micromasters, HBKUx is committed to align with this focus and design programs that address global challenges.

## Results

The *Solar Energy in Hot Desert Climates* program has drawn over 1000 learners from regions across the world; most notably the MENA region, North and South America, Europe and countries such as India, Australia, and Indonesia. Throughout the program these learners have

been able to engage with the theory and practicalities behind solar energy and the challenges associated with deploying solar panels in dry, desert conditions.

We designed the program using actual data from solar test sites and weather monitoring stations in Qatar, allowing learners to apply their knowledge to real-world examples. We posed the very specific challenges experienced in desert regions such as monitoring of air quality and soiling of photovoltaic cells and modules and provided techniques to mitigate these challenges and how best to tailor solar energy for a desert region. Our course instructors were filmed in their labs demonstrating the structure and characteristics of solar cells. In other course videos the instructors are seen in the field, showing the effects of the dry, dusty conditions on solar panels.

The interaction between learners and course instructors on the course discussion forums has added to the success of this program, with learners sharing examples of their own work and in-field data and engaging with the instructors on how to best apply their knowledge in their industries.

We are currently working on our next professional certificate program, one that addresses the challenge of creating and hosting sustainable major sport events. With the FIFA World Cup 2022 due to place in Qatar, we are able to leverage the experience of stakeholders in industry to ensure that this program is relevant, accurate and provides a dynamic learning experience.

We look forward to presenting our inaugural success story and collaborating with and learning from other institutions on how to best design and develop for the changing higher education landscape.

## **References**

Ehlers, Ulf. –D., Kellerman, Sarah A. (2019): *Future Skills – The Future of Learning and Higher education. Results of the International Future Skills Delphi Survey*. Karlsruhe

World Economic Forum. *The Future of Jobs Report 2018*. 2018.